From:	Jones, Katrina
To:	R4_SEMS_Records
Subject:	FW: TT-02-048 Westside Lead - Background Sampling Draft QAPP
Date:	Monday, August 26, 2019 9:59:29 AM
Attachments:	TT-02-048 Westside Lead_Background Sampling_QAPP_Draft_8-23-19.pdf

---

From: Kelley, Quinn <quinn.kelley@tetratech.com>
Sent: Friday, August 23, 2019 9:24 AM
To: Berry, Chuck <Berry.Chuck@epa.gov>
Cc: Lattimore, Leigh <Lattimore.Leigh@epa.gov>; Jones, Katrina <Jones.Katrina@epa.gov>; Andrew Johnson <andy.johnson@tetratech.com>; chris.jones@tetratech.com; Reed, Angel <Angel.Reed@tetratech.com>
Subject: TT-02-048 Westside Lead - Background Sampling Draft QAPP

Chuck,

The Tetra Tech, Inc. Superfund Technical Assessment and Response Team (START) is submitting the attached draft quality assurance project plan (QAPP) for the background sampling at Westside Lead in Atlanta, Fulton County, Georgia. Included with this submittal are figures (Appendix A) and tables (Appendix B).

Please let me know if you have any questions or need anything else.

Thanks,

Quinn Kelley
Senior Environmental Scientist
Tetra Tech, Inc.
(678) 775-3101 office
(678) 775-3138 fax

DRAFT
QUALITY ASSURANCE PROJECT PLAN (SHORT FORM)

WESTSIDE LEAD
ATLANTA, FULTON COUNTY, GEORGIA

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 4
Atlanta, GA 30303

Contract No.	:	EP-S4-14-03
TDD No.	:	TT-02-048
Date Prepared	:	August 23, 2019
EPA Task Monitor	:	Chuck Berry
Telephone No.	:	404-562-8278
Prepared by	:	Tetra Tech, Inc.
START IV Project Manager	:	Katie Wise
Telephone No.	:	678-775-3110

Prepared by	Reviewed by	Approved by
Quinn Kelley	Shanna Davis	Andrew F. Johnson
Quinn Kelley START IV Environmental Scientist	Shanna Davis START IV Technical Reviewer	Andrew F. Johnson START IV Program Manager

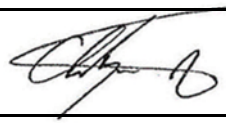
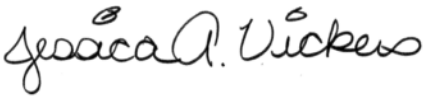
CONTENTS

APPENDICES

QUALITY ASSURANCE PROJECT PLAN (SHORT FORM)

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 4 & TETRA TECH, INC.

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM CONTRACT NO. EP-S4-14-03

Site Name: Westside Lead		**City, County:** Atlanta, Fulton	**State:** Georgia
Prepared By: Tetra Tech, Inc. (Tetra Tech)		**Date:** August 23, 2019	
Approved By: Chris Jones **Title:** Tetra Tech Task Order Manager	**Date:** 8/23/19	**Signature:** 	
Approved By: Jessica Vickers **Title:** Tetra Tech Quality Assurance (QA) Manager	**Date:** 8/23/19	**Signature:** 	
Approved By: Andrew Johnson **Title:** Tetra Tech Superfund Technical Assessment and Response Team (START IV) Program Manager	**Date:** 8/23/19	**Signature:** 	
Approved By: Chuck Berry **Title:** U.S. Environmental Protection Agency (EPA) On-Scene Coordinator (OSC) and EPA Region 4 QA Manager's Designated Approving Official	**Date:**	**Signature:**	

1.0 PROJECT INFORMATION

1.1 Distribution List

EPA Region 4:	Tetra Tech:
Chuck Berry, EPA OSC Leigh Lattimore, EPA Remedial Project Manager Katrina Jones, EPA Project Officer	Angel Reed, Tetra Tech Document Control Coordinator

1.2 Project/Task Organization

Chuck Berry will serve as the EPA OSC for background sampling activities described in this Quality Assurance Project Plan (QAPP). Quinn Kelley will serve as the Tetra Tech project manager and is responsible for maintaining an approved version of this QAPP. Jessica Vickers will serve as the Tetra Tech QA manager and is responsible for providing approval of this QAPP. The EPA OSC has the authority to issue a Stop Work order. Specific Tetra Tech field personnel will be selected before mobilization as defined under the Superfund Technical Assessment and Response Team (START) IV Contract No. EP-S4-14-03 and organized in accordance with the organizational chart found in Figure 1-1 of Section 1.1 in the START Program Level QAPP, March 2016.

1.3 Problem Definition/Background

The Westside Lead site encompasses residential properties on the 300 and 400 blocks of Elm Street in Atlanta, Fulton County, Georgia (see Figure 1 in Appendix A). 395 Elm Street is the primary parcel of interest where small earthen mounds cover the 0.33-acre residential property. 395 Elm Street is bounded by residential properties to the north, east, and south, and Elm Street to the west. Also located on this block is the Elm Street Urban Farm, a community garden encompassing three residential parcels (see Figure 2 in Appendix A).

The study area, consisting of the English Avenue and Vine City neighborhoods, was established in the late 1800s. Historically, industrial facilities operated to the northeast, east, and southeast of these neighborhoods. Specifically, a foundry was identified on an aerial image from 1950 approximately 1 mile southeast of the study area and Atlantic Steel Company operated a steel mill approximately 2 miles northwest of the study area (1901 to 1997). The former foundry area is now part the Mercedes Benz Stadium complex and the former Atlantic Steel facility was razed, remediated, and is now the Atlantic Station development. Foundries and steel mills are known to generate slag as a by-product.

In 2018, EPA was notified that slag material was observed at the Elm Street Urban Farm. Six locations along Elm Street were screened using an X-Ray Fluorescence (XRF) analyzer. Four of the six locations contained lead concentrations greater than 400 parts per million (ppm); two of those locations (403 Elm St. and across the street) showed concentrations over 1,200 ppm. EPA has observed slag-like material at several parcels on Elm Street.

In an effort to establish background lead and arsenic concentrations for comparison to Westside Lead site samples, EPA has tasked Tetra Tech to collect background soil samples from five residential properties outside of the study area boundary.

1.4 Project/Task Description

Tetra Tech is tasked with conducting soil sampling for the Westside Lead site to establish background lead and arsenic concentrations in soil. Tetra Tech will also prepare draft and final reports detailing the findings of the background sampling. The sampling event is scheduled for the week of September 3, 2019.

Surface Soil Sampling:

- Using Incremental Sampling Methodology (ISM), Tetra Tech will collect 30-point composite surface soil (0 to 4 inches below ground surface [bgs]) samples from five residential properties outside of the Westside Lead site.
- One 30-point composite sample may be collected from the entirety of each residential parcel, or a parcel may be divided into two or more decision units for composite ISM sampling within each unit.
- In addition, the appropriate number of quality control (QC) samples will be collected during the sampling event, including field replicate (in triplicate) samples, matrix spike/matrix spike duplicate (MS/MSD) samples, and field and equipment rinsate blank samples, as appropriate.
- Samples will be analyzed for lead and arsenic.
- Soil sampling activities will be conducted in accordance with the EPA Region 4 Laboratory Services and Applied Sciences Division (LSASD) Field Branches Quality System and Technical Procedures (FBQSTP) for *Soil Sampling* (SESDPROC-300-R3), August 21, 2014.
- Sampling locations are depicted on Figure 3 in Appendix A and described in Table B-1 in Appendix B.

Sample Processing:

- Field personnel will homogenize and disaggregate (i.e. crush) the collected soil sample by stirring and crushing the soil using a clean, decontaminated stainless steel spoon.
- The soil will be dried, further disaggregated, and sieved through a 0.15-millimeter (mm) (No. 100) sieve.
- Both the fine fraction (the soil that passes through the No. 100 sieve) and the unsieved fraction (the soil that does not pass through the No. 100 sieve) will be screened in the field using an XRF analyzer and the EPA XRF Field Operations Guide (FOG) prior to shipment to the laboratory for analysis.
- XRF screening will be conducted in accordance with the EPA Region 4 LSASD FBQSTP for *Field X-Ray Fluorescence (XRF) Measurement,* SESDPROC-107-R3, December 18, 2015; and the EPA XRF FOG.

1.5 Quality Objectives and Criteria for Measurement Data

Identification of the seven steps of the data quality objectives (DQO) process: DQOs were established for the Westside Lead site to define the quantity and quality of the data to be collected to support the objectives of the sampling event. DQOs were developed using the seven-step process outlined in the following guidance documents: "EPA Requirements for Quality Assurance Project Plans," EPA QA/R-5, March 2001; "Guidance for Quality Assurance Project Plans," EPA QA/G-5, December 2002; and "Guidance on Systematic Planning Using the Data Quality Objectives Process," EPA QA/G-4, February 2006.

Step 1: State the Problem	**Stakeholders:** EPA, GAEPD, owners, tenants, and the local community. **Site History/Conceptual Site Model:** Soil on residential parcels located near former industrial facilities may be contaminated with lead and arsenic. For additional information, see Section 1.3 of this QAPP. **Statement of Problem:** Sampling and laboratory analysis will be conducted to establish background lead and arsenic concentrations for the Westside Lead site.
Step 2: Identify the Goals of the Study	**Study Questions:** What are the background lead and arsenic concentrations? **Decision Statements:** Evaluate XRF and analytical data to establish background concentrations for lead and arsenic.
Step 3: Identify Information Inputs	**Inputs:** Site history contained in Section 1.3 of this QAPP and the XRF and analytical results generated from the background sampling.
Step 4: Define Study Boundaries	**Spatial Boundary:** The spatial boundary of the background sampling includes residential areas outside the Westside Lead site in Atlanta, GA. **Temporal Boundaries:** Background sampling activities are scheduled for the week of September 3, 2019.
Step 5: Develop the Analytical Approach	**Analytical Methods:** Soil samples will be analyzed for lead and arsenic using EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), 1994. All samples will be submitted to the EPA Region 4 LSASD laboratory. **Comparison Criteria:** Not applicable. **Decision Rules:** Decisions made regarding the results will be determined by EPA.
Step 6: Specify Performance or Acceptance Criteria	Analytical results for initial acceptance will be assessed during validation performed by EPA Region 4 LSASD, Office of Quality Assurance that evaluates the usability of the data. Any rejected data and the reasons for rejection will be summarized in the narrative summary of the analytical data packages. In addition, Tetra Tech will review QC samples against field samples to determine if additional qualifications are warranted.
Step 7: Develop the Plan for Obtaining Data	**Optimized Design:** Up to seven soil samples (including one field triplicate) are proposed to determine background concentrations of lead and arsenic. Sample nomenclature, locations, analytical parameters, and sampling rationales are described in Table B-1 of Appendix B. Appendix B, Table B-2 presents the collection frequencies of various field QC samples. See Appendix A, Figure 3 for sampling locations.

1.6 Special Training/Certification Requirements

☒	OSHA 29 CFR 1910.120	☒	Special Equipment/Instrument Operator (describe below):	☐	Other (describe below):

Special Requirements:	Only field team members trained on the proper use of the Trimble global positioning system (GPS) unit and the XRF analyzer will operate the instruments.

1.7 Documentation and Records

The most current version of this QAPP will be distributed to the entire distribution list presented in Section 1.1. The Tetra Tech project manager will be responsible for maintaining the most current revision of this QAPP and for distributing it to all personnel and parties involved in the field effort. Field records that may be generated during the background sampling include the following:

☒	Chains-of-Custody Forms	☒	Health and Safety Plan (HASP)
☒	Field Instrument Calibration Logs	☒	Photographic log
☒	Field Monitoring and Screening Results	☒	Site Logbook
☒	Tailgate Sign-In Sheet	☒	Site Maps and Drawings

Field documentation and records will be generated and maintained in accordance with the requirements presented in the EPA Region 4 LSASD FBQSTP guidance document for *Logbooks* (SESDPROC-010-R5), May 2013. This document can be found at the following web address: https://www.epa.gov/quality/quality-system-and-technical-procedures-lsasd-field-branches. All field-generated data will also be maintained in the project file and included, as appropriate, in project deliverables in final form after all reviews and applicable corrective actions.

The formal deliverables for EPA associated with this project are specified in the EPA technical direction document. Draft and final reports will be prepared to summarize field activities and findings and present laboratory analytical results. All project records, including electronic and hard copies of field, laboratory, and project deliverables, under Tetra Tech's control will be maintained and retained in accordance with the requirements of EPA START IV Contract No. EP-S4-14-03 and Section 5.0, page 15 of the Tetra Tech START Quality Management Plan (QMP), January 2013.

2.0 DATA GENERATION AND ACQUISITION

2.1 Sampling Process Design

Tables B-1 through B-4 in Appendix B present details on the type and numbers of samples to be collected, sample locations, analytical parameters, sampling rationales, sample containers, laboratory analytical methods, preservation methods, analytical holding times, and performance and acceptance criteria for samples. The rationale for this sampling process design is based on the DQO process discussed in Section 1.5 of this QAPP. Soil samples will be submitted to the EPA Region 4 LSASD laboratory and will be analyzed for lead and arsenic. See Table B-3 in Appendix B for the analytical method.

2.2 Sample Methods Requirements

Matrix	Sampling Method	EPA and Tetra Tech Standard Operating Procedures and Guidance
Soil	Refer to Tables B-1 through B-3 for more details, including requested analytical parameters and methods.	Refer to EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS, 1994. Also, refer to Section 2.2, page 19 of the Tetra Tech START Program Level QAPP, March 2016. A list of applicable Safe Work Practices is included in the HASP, which will be available on site.

Other Sample Method Requirements: The Tetra Tech project manager, in coordination with the EPA OSC, will be responsible for identifying failures in sampling and field measurement systems, overseeing any corrective actions, ensuring that the corrective actions are documented in site logbooks and other appropriate records, and assessing the effectiveness of corrective actions. GPS data collected in the field will be conducted in accordance with the EPA Region 4 LSASD FBQSTP *Global Positioning System* (SESDPROC-110-R4), June 2015. Field decontamination will be conducted in accordance with the procedures provided in the EPA Region 4, LSASD FBQSTP *Field Equipment Cleaning and Decontamination* (SESDPROC-205-R3), December 2015. All EPA Region 4 LSASD FBQSTP procedures are available at the following web address https://www.epa.gov/quality/quality-system-and-technical-procedures-lsasd-field-branches.

Equipment required for this sampling event includes the XRF analyzer; ISM soil sampling device; sample packaging materials, such as coolers and suitable packing material; Trimble GPS unit; and personal protective equipment (PPE) identified in the HASP (including disposable nitrile gloves and boot covers). Also see Table B-5 in Appendix B of this QAPP for a list of field equipment and supplies.

2.3 Sample Handling and Custody Requirements

Sample handling and chain-of-custody record keeping will be conducted in accordance with EPA Region 4, LSASD FBQSTP *Packing, Marking, Labeling, and Shipping of Environmental and Waste Samples* (SESDPROC-209-R3), February 2015; and *Sample and Evidence Management* (SESDPROC-005-R2), January 2013; both are available at the following web address: https://www.epa.gov/quality/quality-system-and-technical-procedures-lsasd-field-branches.

Once collected, all background samples will be placed back into the field kit and custody sealed. The Tetra Tech project manager will ensure that custody of samples is maintained until they are shipped to the laboratory. Chain-of-custody records will be used to document the samples collected and their delivery to the laboratory. Also refer to Section 2.3, page 27 of the Tetra Tech START Program Level QAPP, March 2016.

2.4 Analytical Method Requirements

Data validation of the analytical data packages from the Region 4 LSASD laboratory will be conducted by the EPA Region 4 LSASD, Office of Quality Assurance. Data validation will be conducted in accordance with EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS, 1994; and Section 4.2.2, page 51 of the Tetra Tech START Program Level QAPP, March 2016. Laboratory instruments required for sample analyses are contained in the associated methods. Modifications to data validation criteria will be provided by EPA. The individual responsible for ensuring the success of the analyses is Jeff Hendel, EPA LSASD, Chief of the Inorganic Chemistry Section.

A 21-day turnaround time will be requested for the LSASD, Office of Quality Assurance to submit final results to Tetra Tech and the EPA OSC. Within 14 days after the validated package is received, Tetra Tech will conduct a review of the field QC results and a cursory review of the data packages against the chain-of-custody records to ensure that results for all samples are received and if any additional qualifications are warranted. The data packages will also be reviewed to determine whether any data are rejected and whether any data qualifiers assigned during the validation process affects the usability of the data as defined in Section 1.5 of this QAPP.

2.5 Quality Control Requirements

GPS data, using a Trimble Geo-series GPS receiver, will be collected during this investigation. QC requirements for GPS data collection are provided in the manufacturer's instruction manual and the EPA Region 4, LSASD FBQSTP *Global Positioning System* (SESDPROC-110-R4), June 2015. Also refer to Section 2.5.1, page 33 of the Tetra Tech START Program Level QAPP, March 2016.

QC requirements for the analytical method are presented in EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS, 1994; and Section 2.5.2, page 34 of the Tetra Tech START Program Level QAPP, March 2016.

Field QC samples will include field triplicate samples at a frequency of one field triplicate sample for every 20 samples per medium collected. QC samples will be submitted for analyses listed in Table B-2 of Appendix B.

2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements

For instrument testing, inspection, and maintenance requirements for field monitoring, refer to EPA, Region 4 LSASD FBQSTP *Equipment Inventory and Management*, SESDPROC-108-R5, August 2015; *Global Positioning System*, SESDPROC-110-R4, June 2015; and *Field Equipment Cleaning and Decontamination*, SESDPROC-205-R3, December 2015. All are available at the following web address: https://www.epa.gov/quality/quality-system-and-technical-procedures-lsasd-field-branches. Also refer to the equipment manufacturer's operating manual for further instructions on field instrument testing, inspection, and maintenance, as well as to Section 2.6.2, page 40 of the Tetra Tech START Program Level QAPP, March 2016. Table B-5 in Appendix B of this QAPP contains a list of field equipment that will be used during this sampling event. The project manager or designee will be responsible for ensuring the correct operation of all field equipment.

Laboratory instrument testing, inspection, and maintenance requirements are contained EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS, 1994; the instrument and equipment manufacturer's operating manuals associated with the analytical methods; the laboratory quality assurance manual; and Section 2.6.3, page 40 of the Tetra Tech START Program Level QAPP, March 2016.

2.7 Instrument Calibration and Frequency

For instrument calibration and frequency requirements for field monitoring, refer to EPA LSASD FBQSTP *Equipment Inventory and Management*, SESDPROC-108-R5, August 2015; and *Global Positioning System*, SESDPROC-110-R4, June 2015. All are available at the following web address: https://www.epa.gov/quality/quality-system-and-technical-procedures-lsasd-field-branches. Also refer to the equipment manufacturer's operating manuals for further instructions on calibration, as well as to Section 2.7.1, page 41 of the Tetra Tech START Program Level QAPP, March 2016.

Instrument calibration and frequency requirements for analytical methods are specified in EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS, 1994; the instrument and equipment manufacturer's operating manuals associated with the analytical methods; the laboratory quality assurance manual; and in Section 2.7.2, page 41 of the Tetra Tech START Program Level QAPP, March 2016.

2.8 Inspection/Acceptance Requirements for Supplies and Consumables

Supplies and consumables required for this sampling event will be inspected and accepted by the Tetra Tech project manager or designated field team member, and include sampling implements, sample packaging materials, field measurement instruments (GPS Trimble unit and XRF), and PPE identified in the HASP. All sample containers will be pre-cleaned certified and meet the required detection limits established by EPA in the Office of Solid Waste and Emergency Response Directive 9240.0.05A *Specifications and Guidance for Contaminant-Free Sample Containers*. Sampling implements will be either disposable, one-time use devices or sealed, decontaminated equipment with a chain-of-custody seal. Sampling equipment and packaging materials will meet the requirements of EPA Region 4 LSASD FBQSTP *Packing, Marking, Labeling and Shipping of Environmental and Waste Samples*, SESDPROC-209-R3, February 2015. See Section 2.8, page 43 of the Tetra Tech START Program Level QAPP, March 2016. See Table B-5 in Appendix B for a complete list of supplies and consumables.

2.9 Non-Direct Measurement Requirements

Information pertaining to the site (including photographs, maps, and so forth) has been compiled from file information obtained from EPA and GAEPD. The extent to which these data and information, if any, are used to achieve the objectives of this project will be determined by Tetra Tech in cooperation with the EPA OSC. Any justifications and qualifications required for the use of these data and information will be provided in the reports generated for this project. Refer to Section 2.9, page 43 of the Tetra Tech START Program Level QAPP, March 2016.

2.10 Data Management

All reference materials generated during this investigation and included in the final reports will be submitted to the EPA OSC in portable document format (PDF). Tetra Tech will submit sample location information to EPA Region 4 for inclusion in the Environmental Quality Information System (EQuIS). All field-generated data will be managed as part of the permanent field record for the project. All laboratory analytical data will be managed in accordance with the requirements of the associated analytical methods; as well as the EPA Region 4 policy and applicable federal regulations. Finally, all field-generated data, laboratory data, and other records (electronic and hard copy) generated or obtained during this project will be managed and retained according to the requirements of the EPA START IV Contract No. EP-S4-14-03, as well as to Section 2.10, page 44 of the Tetra Tech START Program Level QAPP, March 2016; and Section 5.0, page 15 of the Tetra Tech START QMP, January 2013.

3.0 ASSESSMENT AND OVERSIGHT

3.1 Assessment and Response Actions

Field and laboratory audits will not be conducted for this project. All deliverables to which Tetra Tech contributes in whole or in part, including the draft and final reports, will be subject to a corporate two- or three-tiered review process, which includes a technical review, a QC review, and (for the three-tiered review only) an editorial review. Each reviewer will sign off on a QC review sheet recording any issues or revisions and how they have been addressed. These reviews will be performed by qualified individuals in accordance with the requirements of EPA START IV Contract No. EP-S4-14-03 and with Section 3.1, page 45 of the Tetra Tech START Program Level QAPP, March 2016.

3.2 Corrective Action

The Tetra Tech project manager, in coordination with the EPA OSC, will be responsible for identifying failures in sampling and field measurement systems (GPS coordinates, XRF results), overseeing any corrective actions, ensuring that the corrective actions are documented in site logbooks and other appropriate records, and assessing the effectiveness of corrective actions. Corrective action requirements for analytical methods are presented in EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS, 1994; and Section 3.1.2, page 47 of the Tetra Tech START Program Level QAPP, March 2016.

3.3 Reports to Management

Tetra Tech is responsible for notifying the EPA OSC if any circumstances arise during the field investigation that may impair the quality of the data collected. All formal deliverables to EPA associated with this project will be prepared, reviewed, and distributed in accordance with the requirements of the EPA START IV Contract No. EP-S4-14-03, Section 3.2, page 49 of the Tetra Tech START Program Level QAPP, March 2016, and under the supervision of the Tetra Tech QA manager, Jessica Vickers or appropriate designee.

4.0 DATA VALIDATION AND USABILITY

4.1 Data Review, Verification, and Validation Requirements

All field-generated data and records (such as GPS coordinates of sample locations, XRF results, field logbook notes, and field sample collection sheets) will be reviewed for completeness and accuracy by the Tetra Tech project manager and appropriate designees. Field data and records will be reviewed at the end of each day so that corrective actions, if necessary, can be made prior to demobilizing from the site. After field work is completed, GPS data generated in the field will be downloaded and reviewed by the project manager to ensure that it is accurate. Any errors will be discussed with a Tetra Tech geographic information system (GIS) analyst and project manager, corrected, and noted in the logbook.

Data validation of the EPA Region 4 LSASD laboratory analytical data packages will be conducted by the EPA Region 4 LSASD, Office of Quality Assurance. Data validation will be conducted in accordance with EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS, 1994; and Section 4.2.2, page 51 of the Tetra Tech START Program Level QAPP, March 2016. Laboratory instruments required for sample analyses are contained in the associated methods.

Modifications to data validation criteria will be provided by EPA. The individual responsible for ensuring the success of the analyses is Jeff Hendel, EPA LSASD, Chief of the Inorganic Chemistry Section.

Tetra Tech will conduct a review of the field QC results against the field samples and a cursory review of the data packages against the chain-of-custody records to ensure that results for all samples are received. The data packages will also be reviewed to determine whether any data are rejected and whether any data qualifiers assigned during the validation process affects the usability of the data as defined in Section 1.5 of this QAPP.

4.2 Verification and Validation Methods

All field-generated data will be maintained in the project file and included (as appropriate) in project deliverables in final form after all reviews and associated corrective actions. The final data package will contain a summary of all data qualifier flags and their explanations. Also see Section 4.2, page 51 of the Tetra Tech START Program Level QAPP, March 2016.

4.3 Reconciliation of the Data to the Project-Specific DQOs

The Tetra Tech project manager, in cooperation with the EPA OSC and Tetra Tech QA Manager, will be responsible for reconciling the data and other project results with the requirements specified in this QAPP and by the data users and decision makers. Ultimate acceptance of the data is at the discretion of the EPA OSC. Depending on how specific data quality indicators do not meet the project's requirements, the data may be discarded, and resampling and reanalysis of the subject samples may be required. Resampling, reanalysis, or other out-of-scope actions identified to address data quality deficiencies and data gaps will require approval by the EPA OSC, EPA Project Officer, and EPA Contracting Officer.

Limitations of the data and data rejection and qualification will be identified during the data review process conducted by EPA Region 4 SESD, Office of Quality Assurance and Tetra Tech. To assess the data relative to the objectives of the project, the data will be reviewed to determine whether any data are rejected and whether any data qualifiers or limitations assigned during the data review process affect the usability of the data as defined in Section 1.5 of this QAPP. All final laboratory data packages will be reviewed to evaluate whether the site-specific DQOs, as defined in Section 1.5 of this QAPP, are met. The data will be reconciled with the project-specific DQOs also in accordance with EPA guidance documents, including "Guidance on Systematic Planning Using the Data Quality Objectives Process," EPA QA/G-4, February 2006. Also see Section 4.3, page 53 of the Tetra Tech START Program Level QAPP, May 2012.

APPENDIX A

FIGURES

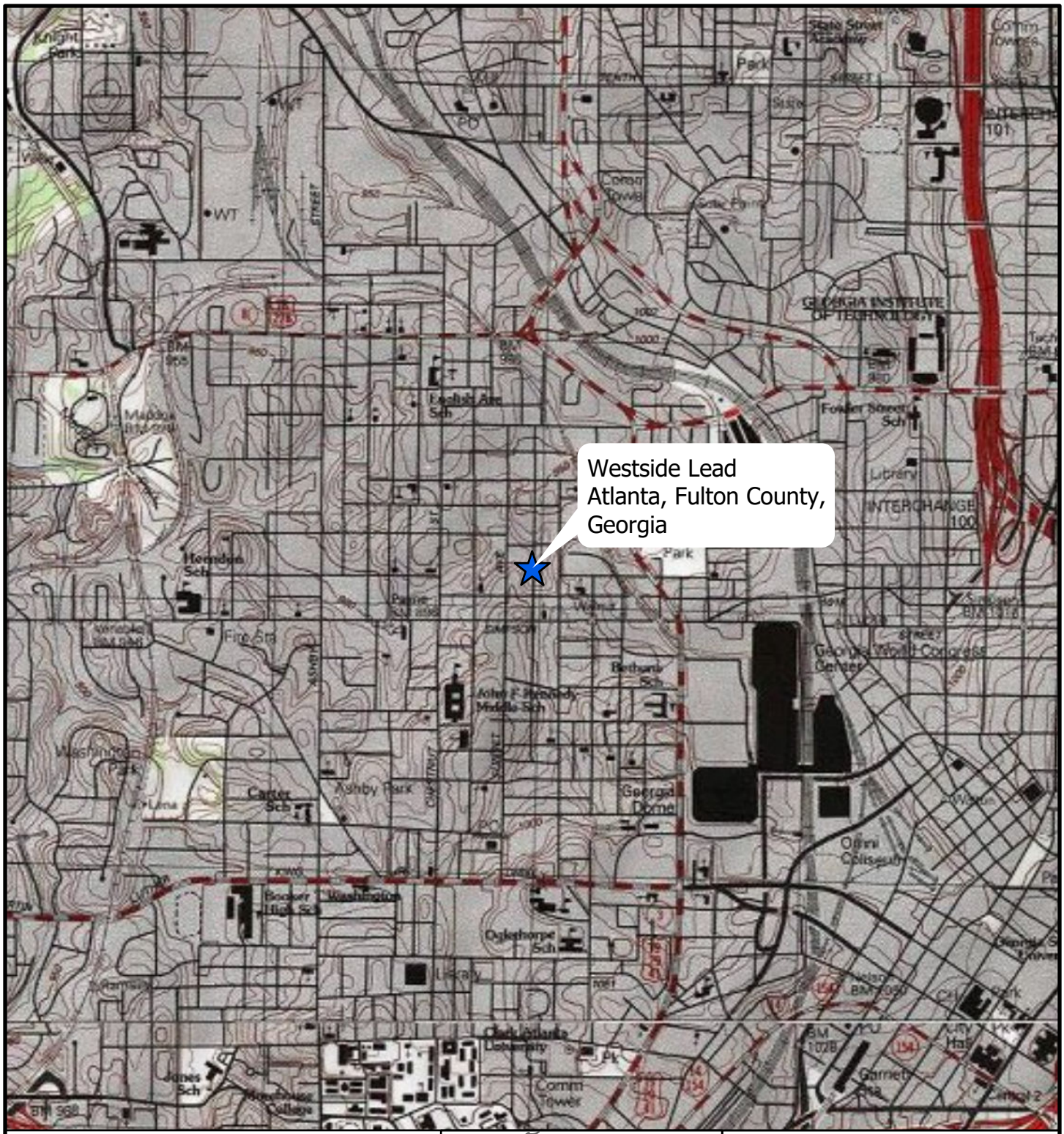
(Three Pages)

Figure

1 SITE LOCATION

2 SITE LAYOUT

3 PROPOSED BACKGROUND SAMPLE LOCATIONS

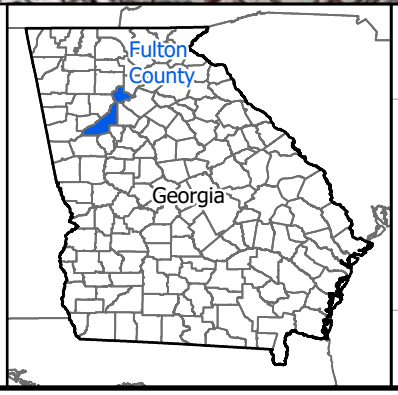


Legend

Site Location

N
W E
S

0 1,000 2,000
Feet



Map Source:
USGS 7.5 Minute Topographic Quadrangle Maps:
Northwest and Southwest Atlanta, GA 1981

United States
Environmental Protection Agency
Region 4

FIGURE 1

Site Location

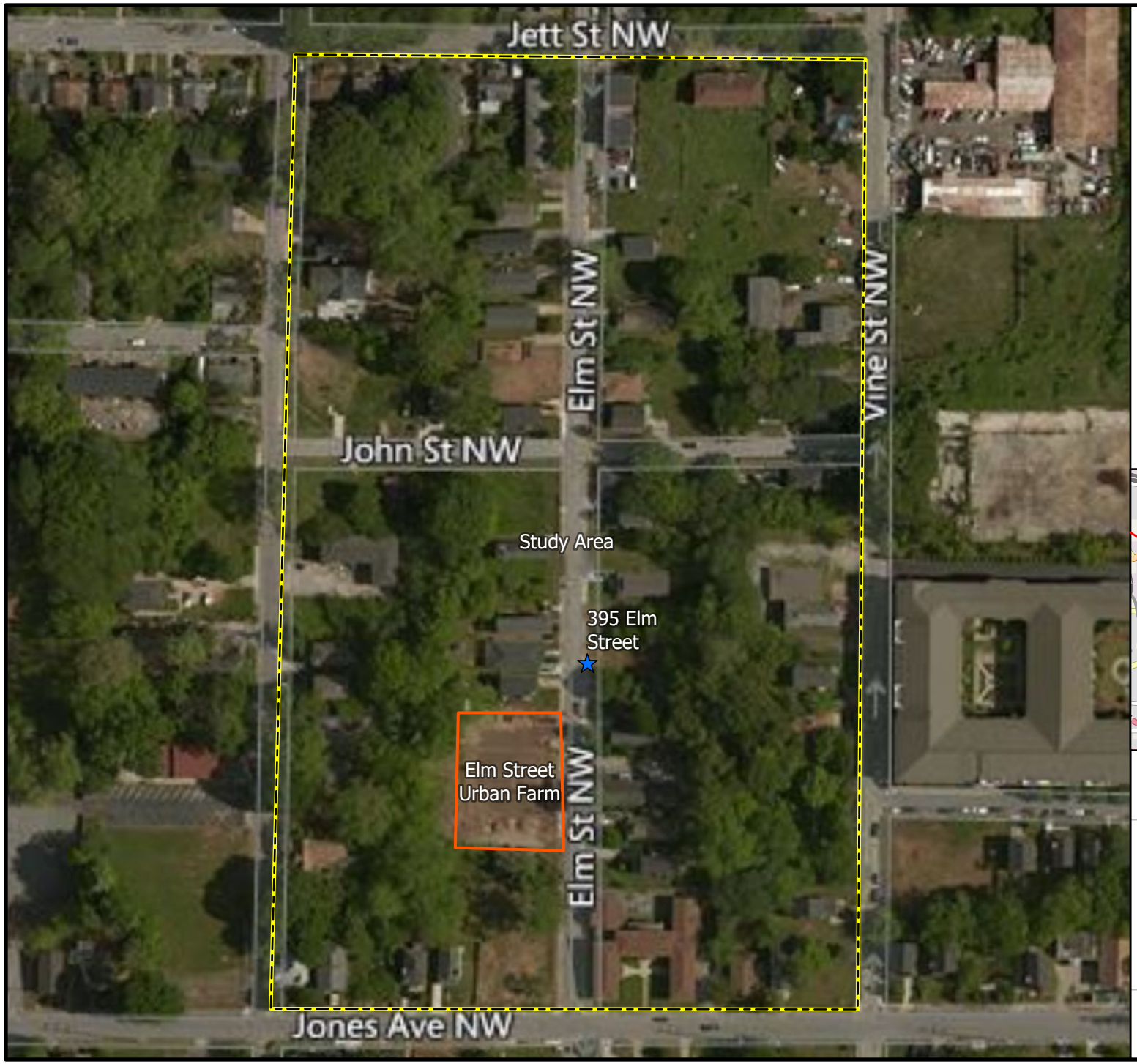
TDD Name: Westside Lead
TDD No.: TT-02-048

City:	**County:**	**State:**
Atlanta	Fulton	Georgia

TETRA TECH

Date: 8/22/2019
Analyst: KATIE.WISE

File: C:\Users\katie.wise\Documents\TT-02-048_ElmStreetLead\Bkgd_WSL_Pro\Bkgd_WSL_Pro.aprx



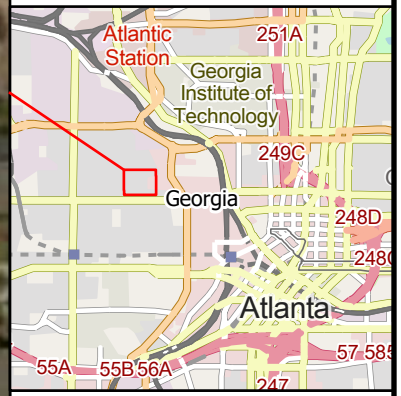
Legend

- Study Area
- Elm Street Urban Farm
- Site Location

N
W E
S

0 100 200
Feet

Map Source:
Bing Maps Hybrid



United States Environmental Protection Agency
Region 4

FIGURE 2

Site Layout

TDD Name: Westside Lead

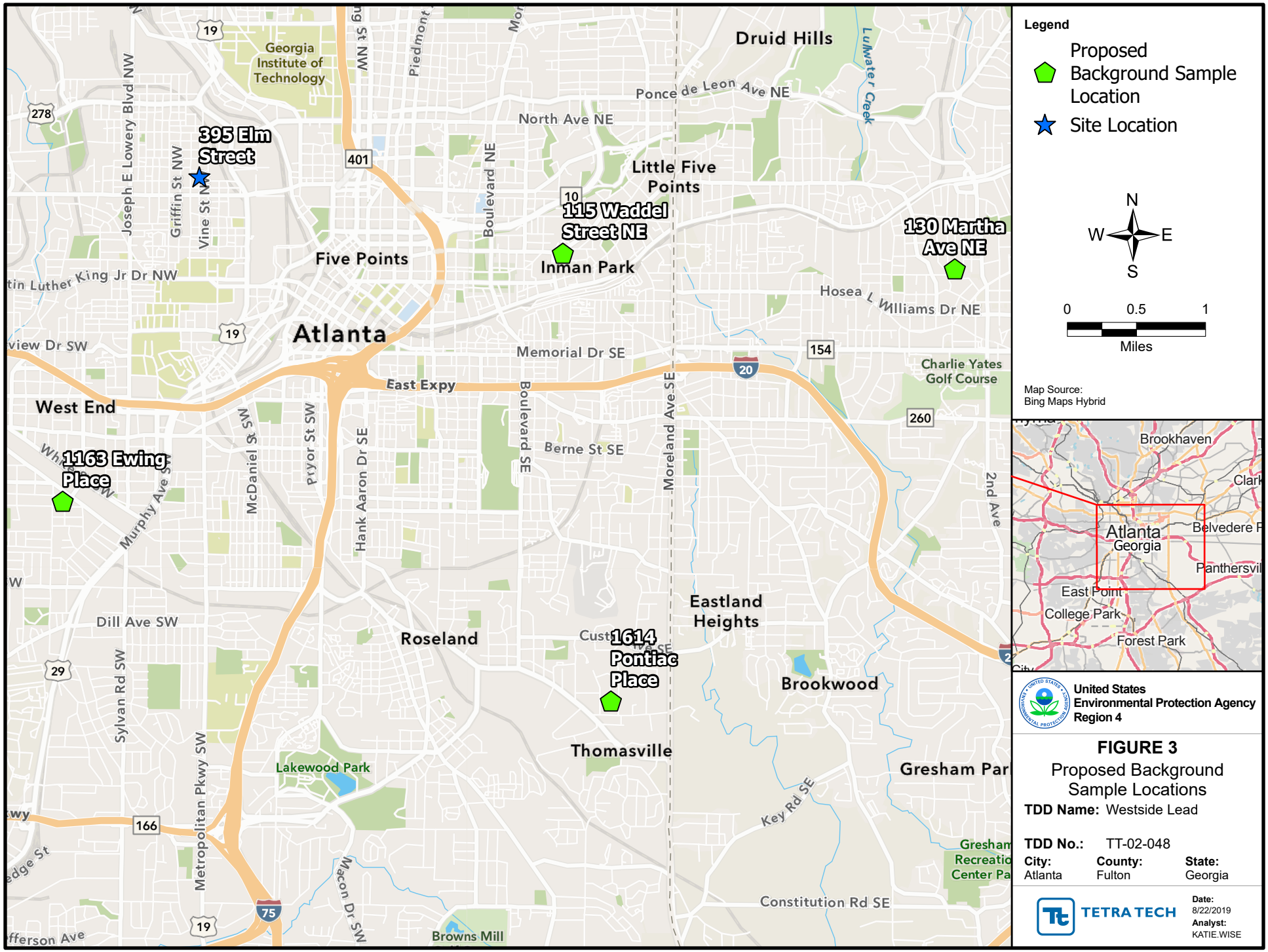
TDD No.: TT-02-048

City:	**County:**	**State:**
Atlanta	Fulton	Georgia

TETRA TECH

Date: 8/22/2019
Analyst: KATIE.WISE

File: C:\Users\katie.wise\Documents\TT-02-048_ElmStreetLead\Bkgd_WSL_Pro\Bkgd_WSL_Pro.aprx



File: C:\Users\katie.wise\Documents\TT-02-048_ElmStreetLead\Bkgd_WSL_Pro\Bkgd_WSL_Pro.aprx

APPENDIX B

TABLES

(Five Pages)

Table

TABLE B-1
WESTSIDE LEAD - BACKGROUND SAMPLING
BACKGROUND SOIL SAMPLING LOCATIONS

Station ID	Sample ID	Depth (inches bgs)	Sample Type	Sample Location	Analysis	Rationale
TBD	TBD-S	4	ISM	130 Martha Avenue NE	Lead and Arsenic	Background soil sample for comparison to on-site soil sample results
	TBD-US					
TBD	TBD-S	4	ISM	1614 Pontica Place	Lead and Arsenic	Background soil sample for comparison to on-site soil sample results
	TBD-US					
TBD	TBD-S	4	ISM	1163 Ewing Place	Lead and Arsenic	Background soil sample for comparison to on-site soil sample results
	TBD-US					
TBD	TBD-S	4	ISM	115 Waddell Street NE	Lead and Arsenic	Background soil sample for comparison to on-site soil sample results
	TBD-US					
TBD	TBD-S	4	ISM	TBD	Lead and Arsenic	Background soil sample for comparison to on-site soil sample results
	TBD-US					

Notes:

bgs	Below ground surface
ID	Identification
ISM	Incremental sampling methodology (30-point composite)
S	Sieved
TBD	To be determined
US	Unsieved

TABLE B-2
WESTSIDE LEAD - BACKGROUND SAMPLING
QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

Sample ID	Sample Type	Analysis	Rationale
(Original sample ID)	MS/MSD	Lead and Arsenic	Provide information about the effect of each sample matrix on sample processing, preparation, and analysis. One MS/MSD sample will be designated for every 20 samples collected per matrix.
(Original sample ID)-DUP/TRI	Field replicate (triplicate) sample	Lead and Arsenic	Measure both field and laboratory precision. One field triplicate sample set will be collected for every 20 samples collected per matrix.
TBD	Equipment rinsate blank for fine soil fraction (aqueous)	Lead and Arsenic	Evaluate whether decontamination procedures adequately clean sampling equipment. One equipment rinsate blank will be submitted per 20 fine fraction samples submitted for metals analysis, to include all types of equipment used.
TBD	Field blank (aqueous)	Lead and Arsenic	Evaluate the potential for contamination of a sample from sources not associated with sample collection (ambient conditions). One field blank will be submitted for each lot of high-purity, final rinse water used.

Notes: Also refer to Section 2.5 of this QAPP.

DUP Field duplicate
ID Identification
MS/MSD Matrix spike/matrix spike duplicate
TBD To be determined
TRI Field triplicate

TABLE B-3
WESTSIDE LEAD - BACKGROUND SAMPLING
ANALYTICAL PARAMETERS AND METHODS, REQUIRED SAMPLE CONTAINERS, PRESERVATION METHODS, AND HOLDING TIMES

ANALYTICAL PARAMETER	PARAMETER TO BE NOTED ON CHAIN-OF-CUSTODY RECORDS	MATRIX	ANALYTICAL METHOD[1]	NUMBER AND TYPE OF SAMPLE CONTAINER	PRESERVATION METHOD	SAMPLE HOLDING TIME
SOIL SAMPLES						
Lead and Arsenic	Pb+As	Soil	EPA Method 200.8	One 4-ounce glass jar	None	6 months
AQUEOUS SAMPLES						
Lead and Arsenic	Pb+As	QC samples (equipment rinsate blanks and field blanks)	EPA Method 200.8	One 1-liter poly bottle	Nitric acid (HNO3) to pH<2; cool to 4 °C	6 months

Notes:

[1] EPA Method 200.8 is available at the following web address: https://www.epa.gov/esam/epa-method-2008-determination-trace-elements-waters-and-wastes-inductively-coupled-plasma-mass

°C Degrees Celsius
< Less than
EPA U.S. Environmental Protection Agency
Poly Polyethylene (HDPE) bottle
QC Quality control

TABLE B-4
WESTSIDE LEAD - BACKGROUND SAMPLING
PERFORMANCE OR ACCEPTANCE CRITERIA

SOIL AND FIELD QUALITY CONTROL SAMPLES	
Analytical Parameter	**Analytical Method**
Lead and Arsenic	EPA Method 200.8
DATA QUALITY MEASUREMENTS	
Accuracy	Refer to EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), 1994; EPA Region 4, LSASD FBQSTPs for *Soil Sampling*, SESDPROC-300-R3, August 21, 2014; *Field X-Ray Fluorescence (XRF) Measurement*, SESDPROC-107-R3, December 18, 2015; *Field Equipment Cleaning and Decontamination*, SESDPROC-205-R3, December 2015; *Global Positioning System*, SESDPROC-110-R4, June 2015; and the data validation guidance documents discussed in Sections 4.1 and 4.2 of this QAPP.
Precision	Refer to EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), 1994; EPA Region 4, LSASD FBQSTPs for *Soil Sampling*, SESDPROC-300-R3, August 21, 2014; *Field X-Ray Fluorescence (XRF) Measurement*, SESDPROC-107-R3, December 18, 2015; *Field Equipment Cleaning and Decontamination*, SESDPROC-205-R3, December 2015; *Global Positioning System*, SESDPROC-110-R4, June 2015; and the data validation guidance documents discussed in Sections 4.1 and 4.2 of this QAPP.
Representativeness	Refer to EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), 1994; EPA Region 4, LSASD FBQSTPs for *Soil Sampling*, SESDPROC-300-R3, August 21, 2014; *Field X-Ray Fluorescence (XRF) Measurement*, SESDPROC-107-R3, December 18, 2015; *Field Equipment Cleaning and Decontamination*, SESDPROC-205-R3, December 2015; *Global Positioning System*, SESDPROC-110-R4, June 2015; and the data validation guidance documents discussed in Sections 4.1 and 4.2 of this QAPP.
Completeness	Based on a review of the available file information, including discussions with the EPA project manager, soil samples are proposed for collection. The EPA project manager is responsible for determining if the field and laboratory data collected during this project achieve the level of completeness required to meet the objectives of the project.
Comparability	Sample and data comparability is expected to be achieved by conducting all field and laboratory work using the same, well-documented, uniform procedures.

Notes:

EPA U.S. Environmental Protection Agency
FBQSTP Field Branches Quality System and Technical Procedures, available at the following web address: https://www.epa.gov/quality/quality-system-and-technical-procedures-lsasd-field-branches
LSASD Laboratory Services and Applied Sciences Division
QAPP Quality Assurance Project Plan

TABLE B-5
WESTSIDE LEAD - BACKGROUND SAMPLING
EQUIPMENT AND SUPPLIES

FIELD INSTRUMENTS/ EQUIPMENT	SAMPLE CONTAINERS	SAMPLING EQUIPMENT AND SUPPLIES	SAMPLE PROCESSING SUPPLIES	DECONTAMINATION SUPPLIES	MISCELLANEOUS SUPPLIES
Trimble GPS unit	4-ounce jars	Nitrile gloves	Resealable plastic bags		Digital camera
XRF analyzer	1-liter polys	Sampling device	Custody seals		Permanent markers
		Aluminum pans	Labels		Logbooks
		Stainless-steel spoons	Laptop		Garbage bags
		Ultra-pure blank water	Printer		First aid kit
		No. 100 sieve material	Paper		Eyewash
		Poly rings	FedEx labels		Spray paint
		vent hood	Duct tape, strapping tape		Pin flags
			Paper towels		

Notes:

GPS Global positioning system
XRF X-ray fluorescence